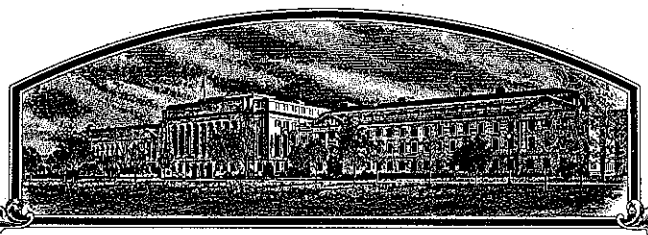

No. 9100251

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

The Ohio State University,
Ohio Agricultural Research and Development Center

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS EC Y THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Excel'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 31st *day of* March *in the year of our Lord one thousand nine hundred and* ninety-three.

Attest:

Kenneth Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
The Ohio State University, Ohio Agricultural Research and Development Center

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
OH 286

3. VARIETY NAME
Excel

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
1680 Madison Ave.
Wooster, OH 44691

5. PHONE *(Include area code)*
216-263-3886

FOR OFFICIAL USE ONLY

PVPO NUMBER
9100251

FILING
Date: Aug. 26, 1991
Time: ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $2,150.-
Date: Aug. 26, 1991
Certificate Fee: $250.00
Date: Mar. 12, 1993

6. GENUS AND SPECIES NAME
Triticum aestivum L.

7. FAMILY NAME *(Botanical)*
Graminae

8. CROP KIND NAME *(Common Name)*
Soft Red Winter Wheat

9. DATE OF DETERMINATION
6/27/90

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Agricultural Experiment Station

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. H. N. Lafever
Agronomy Department
Ohio Agricultural Research and Development Center
1680 Madison Ave., Wooster, OH 44691
PHONE *(Include area code)*: 216-263-3886

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. [X] Exhibit A, Origin and Breeding History of the Variety.
b. [X] Exhibit B, Novelty Statement.
c. [X] Exhibit C, Objective Description of Variety.
d. [X] Exhibit D, Additional Description of Variety.
e. [X] Exhibit E, Statement of the Basis of Applicant's Ownership.
f. [X] Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office (enclosed).
g. [X] Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
[X] YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[X] YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____.)
[X] NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[X] YES (If "YES," give names of countries and dates) U.S. only - 1st date of sale, Sept. 7, 1990
☐ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
Howard N. Lafever	(Breeder)	6/14/91
James H Brem	(Director)	8/16/91

Exhibit A

Origin and Breeding History of the Variety

1. Excel (previously known as OH 286) originated at The Ohio State University, Ohio Agricultural Research and Development Center from the cross: Purdue 5672A7-1-1-1-2/Arthur//Logan/Timwin-F2. The final cross was made in 1970 and designated 10770. Excel was first selected in 1973 as an F3 plant, reselected in 1974 as a single plant, and again in 1977 as a single plant in the F7 generation. It was reselected again in 1984 through 1987 as described below. Its experimental designation was 10770B1-19-5-3.

2. Breeder seed of Excel consists of the progeny of 73 single plants selected in the F14 generation in 1984 which appeared identical in separate plots in 1985 through 1987 and were bulked for further increase following the 1987 harvest. Foundation generation seed was first produced in 1990 with the first distribution of Foundation generation seed made in the fall of 1990 to producers of Registered and Certified classes of seed.

3. Excel appears to be very uniform and homozygous as observed in the field over the past three years. This is to be expected based on the selection and increase procedures used.

4. Excel appears to be very stable and true breeding as evidenced by agronomic and pathological examination of the F15-F17 generations in special purification and increase nurseries.

5. Variants observed during the development of the variety were few in number and of various, non-recurring types, typical of most breeding programs involving self-pollinating species. However, in the 1990 Foundation generation production fields a rather consistent off-type was present in the form of taller, dark green plants of similar head type. The total of all off-type plants did not exceed .1%. Roguing of such off types was performed, however, this percentage should be allowed in the description of the variety.

6. This variety was selected primarily for its high yielding ability. Additionally, selection for all other important agronomic, pathologic, and quality traits was exercised. The variety was tested and selected in comparison to varieties popular in Ohio, namely, Becker, Caldwell, Cardinal, and Titan.

Exhibit B

Novelty Statement and Botanical Description of the Variety

Excel is an apically awnletted, white chaffed, soft red winter wheat variety. It exhibits moderate sized heads, medium kernels, and medium green foliage. The variety is very short, averaging only about 5 cm taller than Becker. It is medium in maturity, heading normally the same time as Cardinal and Dynasty. Straw strength of Excel is excellent, equaling Becker in percent lodging in 43 tests over seven years. Winterhardiness of Excel is also excellent, equaling Dynasty. Test weight of Excel is only medium. The yield record of Excel is excellent, exceeding both Becker and Cardinal, but slightly below that of Dynasty in these same 43 tests.

Excel has been shown to possess excellent milling quality and very good baking quality in tests concluded on samples grown in 1980 through 1988.

Excel possesses good field resistance to leaf rust (*Puccinia recondita*), but only moderate resistance to powdery mildew (*Erysiphe graminis*). It is very resistant to wheat spindle streak mosaic virus (WSSM). Excel also possesses the H6 gene for resistance to races A, B, E, H, I, J, M, and GP of Hessian fly (*Mayetoila destructor*).

Excel most closely resembles Dynasty, however, it is approximately 5 cm shorter, possesses the H6 than the H3 gene for Hessian fly resistance and exhibits tip awns rather than being fully awned.

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
The Ohio State University, Ohio Agricultural Research and Development Center

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
1680 Madison Ave.
Wooster, OH 44691

FOR OFFICIAL USE ONLY
PVPO NUMBER 9100251

VARIETY NAME OR TEMPORARY DESIGNATION
Excel

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (*e.g.* [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____ [1] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2][2][7] FIRST FLOWERING [2][3][2] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[ ][ ] NO. OF DAYS *EARLIER* THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[ ][4] NO. OF DAYS *LATER* THAN ..... [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:

[ ][9.][0] CM. HIGH

[ ][ ] CM. TALLER THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[ ][4] CM. SHORTER THAN ..... [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[ ][4] NO. OF NODES *(Originating from node above ground)*

[1][9] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][4] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][0] CM. LEAF LENGTH *(First leaf below flag leaf)*:

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FORM GR-470-6 (REVERSE)

11. HEAD:

[2] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* _____

[2] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[2] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: _____

[7.8] CM. LENGTH [10] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[3] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

[24] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[1] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[1] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[NA] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)* _____

[06] MM. LENGTH [3 1/2] MM. WIDTH [33] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[3] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] STEM RUST *(Races)* _____ [2] LEAF RUST *(Races)* (Field) [0] STRIPE RUST *(Races)* _____ [0] LOOSE SMUT

[1] POWDERY MILDEW [0] BUNT [2] OTHER *(Specify)* WSSM virus

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY [0] APHID *(Bydv.)* [0] GREEN BUG [0] CEREAL LEAF BEETLE

[0] OTHER *(Specify)* _____

HESSIAN FLY RACES: [2] GP [2] A [2] B [1] C [1] D [2] E [1] F [1] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	-	Seed size	Dynasty
Leaf size	Cardinal	Seed shape	Cardinal
Leaf color	Dynasty	Coleoptile elongation	Dynasty
Leaf carriage	Dynasty	Seedling pigmentation	Dynasty

RECEIVED USDA AMS AUG 26 1991

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

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Exhibit D

Additional Description of the Variety

Plant color of Excel at booting is best described as green (Item 6, Exhibit C), however, it is more accurately described as grey-green to blue-green, especially under high fertility conditions.

Anther color is best described as yellow (Item 7, Exhibit C), however, it is more accurately described as white. Additionally, anthers typically exhibit early and extensive extrusion from the florets such that this is essentially a unique trait of this variety.

Normally there are 4 stem nodes exhibited by Excel (Item 8, Exhibit C), however, occasionally 5 nodes are present

Heads of Excel are best described as dense (Item 11, Exhibit C), however, they are more accurately described as intermediate in density. Heads are mostly erect at maturity.

9100251

Sunbeam Extract Co.

Howard N. Lafever, Ph.D.

December 23, 1992

Alan Atchley
Plant Variety Protection Office
NAL Bldg., Room 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

Dear Mr. Atchley:

Thank you for your letter of 12/14/92 concerning PV Application No. 9100251, for 'Excel' wheat.

In Exhibit C, the plant height of Excel should have been reported as 90 (ninety) centimeters. I am not sure how the decimal appeared in this number.

Concerning quality data on this variety, I am not aware how much you know about the performance and procedures of the USDA Soft Wheat Quality Laboratory, the lab which performs quality testing of eastern soft wheats. In addition to the usual season and location effects on cultivar quality, recent changes in procedures, changes in control cultivars, etc., has led to some considerable variation in quality scores. Below are listed annual milling and baking scores for Excel, Becker, Cardinal, and Dynasty wheats over the years available at the time of the release decision: (The first letter represents milling grade, the second, baking grade from A = excellent to F = unsatisfactory)

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Excel	AA	A+B	A+B	CC	AB	A+C	CA+	BE	CC
Becker	AA	BA	BA+	CC	CD	AA	DE	AA	DA
Cardinal	AA	A+A+	A+C	A+B	A+A+	A+A+	AE	AB	BD
Dynasty	A+A+	A+A	CC	CC	AD	AD	CC	AD	CD

The above letter scores are based on a more complex set of numbers generated by various milling and baking tests and are very severe scores and are subjective. Overall milling or baking score is simply the lowest score on any one of the several tests involved. Since I have retired from the O.A.R.D.C., I do not currently have access to these original data sets, nor do I believe you would be interested in them. Protein values constitute a part of the overall scores reported and are of little interest for describing potential soft wheat quality.

2739 Heyl Rd • Wooster, Ohio 44691 • 216-264-4155

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Exhibit E

Statement of the Basis of Applicant's Ownership

The originating complex cross, early generation increases, early population evaluation, selection, reselection, testing, purification, and final multiplication of this variety were all performed by the applicant breeder (Dr. H. N. Lafever) with the assistance of technical support personnel on the property of The Ohio State University, Ohio Agricultural Research and Development Center utilizing funds provided for such research. The variety is intended for release as a public variety in the United States.